200 EARTHWORK

ITEM 201 - CLEARING AND GRUBBING

201.021 Inspection by Tree Professional

201.03 Clearing and Grubbing

201.021 Inspection by Tree Professional.

Any tree the Engineer deems should not be removed during the work shall be inspected by a Forester or Arborist to determine its relative structural safety and potential chances of surviving 3 years after this earthwork. Any tree that the Forester or Arborist concludes is safe and likely to survive shall be treated in the manner prescribed that is in accordance with the standards specified in 666.011. The treatment designated by the Forester or Arborist is not a guarantee that the tree will survive but is a precaution to help it survive the Earthwork.

201.03 Clearing and Grubbing.

Delete the last sentence in the last paragraph and add the following sentence:

Branches of trees extending over the roadbed shall be pruned in accordance with the standards specified in 666.011 to give a clear height of 20 feet (6m) above the roadbed surface.

ITEM 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

202.02 Construction Requirements

202.021 Abandoned Sewers and Drainage Structures

202.03 Bridges, Culverts and Other Drainage Structures Removed

202.04 Pipe Removed

202.051 Removing Tree Guards

202.052 Removing Tree Grate From Existing Tree Grate Frame

202.08 Manhole, Catch Basin and Inlet Removed

202.09 Manhole, Catch Basin and Inlet Abandoned

202.10 Method of Measurement

202.11 Basis of Payment

To the Sub-Title Listing add the following:

202.02 Construction Requirements.

Delete last paragraph and add the following paragraph:

All existing pipe lines encountered in earthwork operations that are inactive or are to be abandoned as determined by the Engineer shall be plugged or sealed, where broken into, in accordance with 202.021 and covered.

202.021 Abandoned Sewers and Drainage Structures.

All existing sewers, manholes, catch basins and inlets that are to be abandoned or removed as part of this project are noted on the plans.

Manholes, catch basins and inlets to be abandoned should be done so in accordance with the provisions of 202.09.

Manholes, catch basins and inlets to be removed should be done so in accordance with the provisions of 202.08.

Sewers which are to be abandoned shall be plugged or sealed where they join manholes, catch basins or inlets. All existing sewers encountered in construction operations that are inactive or are to be abandoned as determined by the Engineer, shall be plugged or sealed, at both ends where broken into, before proceeding with backfilling.

Where plugging or sealing is required, pipe 1 foot (.03m) or less in diameter shall be sealed by the installation of a suitable precast concrete or vitrified clay stopper properly cemented into place. Pipe or masonry sewers larger than 1 ft. (.03m) in diameter shall be sealed at the required locations by the construction of masonry bulkhead of brick, stone or concrete having a thickness of one-half of the sewer diameter, except that the minimum thickness shall be 1 ft. (.03m) and the maximum thickness shall be 2 ft. (.06m).

All sewers 1 foot (.03m) or less in diameter to be abandoned shall be sealed. All sewers larger than .03m in diameter shall be sealed or filled and sealed as indicated in the contract plans and/or contract specifications. Where filling is required, the Contractor shall have the option of filling by the method of mud jacking or hydraulically. If the mud jack method is used, the material shall be clay which is suitable for this method of work. If the hydraulic method is used, the material shall consist of sand or gravel or material similar to strippings from a gravel pit. Regardless of the method adopted by the Contractor, the material used shall be acceptable to the Engineer. The fill material placed in the sewers shall occupy, after solidification, at least seventy-five percent (75%) of the cross-sectional area of the sewer for the entire length.

In order to meet these specifications, the Contractor may, if approved by the Engineers, dig pit holes to carry out the filling of the sewers. Payment for excavation of the pit holes shall be made at the unit price bid for Item 204, "Special Excavation."

Existing sewers noted on the Plans to be sealed and filled may be removed, at the Contractor's option.

Payment for sealing, or sealing and filling abandoned sewers, or for removing abandoned sewers in lieu of sealing and filling same shall be included in the unit price bid for the various sewer items, unless an item has been included in the Proposal for: Item 202 "Seal and Abandon Existing Sewers" or Item 202 "Fill, Seal and Abandon Existing Sewers."

202.03 Bridges, Culverts and Other Drainage Structures Removed.

Bridges, culverts, and other drainage structures in use shall not be removed until satisfactory arrangements have been made to accommodate traffic and flow.

Where required, existing superstructures shall be entirely removed and existing substructures shall be removed to at least one foot (0.3m) below the proposed ground surface and to the extent necessary to avoid interference with the new construction, including the driving of piles. Portions of substructures within the area of the approach pavement and shoulders shall be removed to at least 3 feet (.9m) below the top of the finished pavement and shoulders. The surface of the ground shall be left in a sightly condition.

Where such portions of existing structures lie wholly or in part within the limits for a new structure, they shall be removed as necessary to accommodate the construction of the proposed structure.

When specified, all structural steel, timber, and other reusable material shall be carefully dismantled, and when specified, steel members shall be match marked as directed by the Engineer. Specified salvaged materials shall be considered as the property of the City and such materials shall be stored as specified in Item 202.02. Where alteration of an existing structure requires removal of portions of the structure, such removal shall be performed with sufficient care as to leave the remaining portion of the structure undamaged. In case of damage to the existing structure, repair or replacement shall be made at the Contractor's expense and as directed by the Engineer.

The Contractor shall be responsible for any damage to salvaged materials resulting from improper methods used or carelessness and shall replace such materials at no additional cost to the City. Care shall be taken in blasting to prevent injury to buildings or to any bridge or part thereof that will remain.

202.04 Pipe Removed.

The following paragraphs shall be added to part (b) of this section:

The removal, where required, of all existing house connections which include sanitary, yard, roof, basement or other similar pipe drains within the construction limits shall be included in the unit price bid for the various sewer items, unless otherwise itemized for payment in the Proposal for 202 "Pipe Removed - House Connections."

If the contract requires installation of new conduit in about the same alignment as the existing pipe, then removal shall be regarded as incidental and included in the price bid for various items.

202.051 Removing Tree Guards.

Description. The Contractor shall furnish all labor, tools, materials, and equipment necessary for removing tree guards from existing tree grates.

Construction. The Contractor shall remove both halves of the tree guard where it is attached to the tree grate. This usually involves the removal of three bolts located on the underside of the grate. Contractor is to reset grate in original condition. Unless otherwise instructed by the Engineer, guards are to be delivered to a specified storage site located within the city limits. Special care must be taken to prevent damage to the tree. Any damage caused by this work must be corrected or compensated for by the Contractor as determined by the Urban Forest Manager.

When encountering situations where the tree has physically grown around or through the metal and the removal of such metal may cause harm to the tree, Contractor shall contact Urban Forest Manager before proceeding.

202.052 Removing Tree Grate From Existing Tree Grate Frame.

Description. The Contractor shall furnish all labor, tools material, and equipment necessary for removing existing tree grates, including removing bolts from underside of grate. If necessary, at the Engineer's discretion, Contractor shall furnish and install plywood inside grate frame to maintain sidewalk surface.

Material. If the Engineer directs, Contractor shall furnish and install three-fourth inch (20mm) thick plywood, cut to exact dimensions of the grate to be removed. Plywood shall be set flush with the top of the frame. Plywood is to be treated with a non-slip surface such as Friction Tape. The opening for the tree shall be cut to allow a uniform 6" (150mm) space between tree and plywood.

Construction. The Contractor shall carefully lift and support the grate and remove the two bolts which hold the halves together. The grate can then be removed. At the Engineer's discretion, Contractor shall install plywood inside grate frame. Broken grates are to be disposed of and intact grates are to be salvaged, and if so directed, hauled to the Highway Maintenance Garage at 3300 Colerain Avenue. Special care must be taken to prevent damage to the tree. Any tree damage caused by this work must be corrected or compensated for by the Contractor as determined by the Urban Forest Manager.

202.08 Manhole, Catch Basin and Inlet Removed. The last paragraph shall be changed as follows: Castings shall be carefully removed and stored for reuse as specified, or for delivery to the City as directed by the Engineer.

Removal under this item will not be paid if the contract calls for a new structure whose plan location necessitates removal of the existing structure.

202.09 Manhole, Catch Basin and Inlet Abandoned. The last paragraph shall be changed as follows: Castings shall be carefully removed and stored for reuse as specified, or for delivery to the City as directed by the Engineer.

202.10 Method of Measurement. Add the following sentences: The removal and delivery of tree guards will be paid for at the unit price bid which shall constitute full compensation for all labor, tools, material, and equipment necessary.

The removal of tree grates shall be paid for at the contract unit price bid per one half grate, which will be full compensation for all labor material, and equipment necessary to complete the work that is described above.

202.11 Basis of Payment. Add the following items to the last paragraph:

Item	Unit	Description
202	Each	Removing Tree Guards
202	Each	Removing Tree Grate From Existing Tree Grate Frame
202	Lump Sum	Seal and Abandon Existing Sewers
202	Cubic Yard (M^2)	Fill, Seal, and Abandon Existing Sewers

ITEM 203 - ROADWAY EXCAVATION AND EMBANKMENT

203.01 Description

203.04 General

203.09 Construction Methods

203.01 Description. The following sentence shall be added to the first paragraph of this section: Existing street signs, traffic markers, and other similar objects within the limits of construction shall be removed and stored on the right-of-way for disposition, as directed by the Engineer. Payment for removal and storing of these items shall be included in Item 203.

203.04 General.

(a) Drainage

Delete second paragraph and add following paragraph:

All existing conduits encountered in earthwork operations that are inactive or are to be abandoned as determined by the Engineer shall be plugged or sealed, where broken into, in accordance with 202.021 and covered.

203.09 Construction Methods. The following two paragraphs shall be added to this section immediately preceding (a):

When embankments are less than three feet (1m) in depth and are constructed over existing pavement, or regardless of embankment depth, if the grade of the existing pavement to be covered is greater than 8%, the pavement shall be broken sufficiently to permit the flow of water through the fractures, and to eliminate a slip plane. Unbroken areas with a long dimension of five feet or more shall not be left in place.

The Contractor shall replace all sections of embankment which have been damaged or displaced, due to carelessness or neglect on the part of the Contractor or due to natural causes such as storms, and not attributable to the unavoidable movement of the natural ground upon which the embankment is made.

(c) Shale. Delete and replace with following paragraphs:

Soil-like, nondurable shale deemed acceptable by the Engineer may be used as embankment material when placed in strict accordance with the construction requirements specified herein. Rock-like, durable shale shall be placed and compacted according to subsection (d) Rock.

Nondurable shale, and/or these materials interbedded with thin seams (less than 4 inches thick) of harder rock shall be compacted utilizing an approved static tamping-foot roller in conjunction with a fibratory tamping-foot roller. The minimum weight for the static tamping-foot roller shall be 60,000 pounds. The minimum compactive effort for the vibratory tamping-foot roller shall be 55,000 pounds. Total compactive effort is defined as that portion of the static weight acting upon the unsprung compaction drum added to the centrifugal force provided by that drum. If the manufacturer's charts do not list the static weight acting upon the compaction drum, the Contrator will be required to have the roller weighed to the satisfaction of the Engineer, and that weight shall be added to the centrifugal force, rated in

accordance with the Construction Industry Manufacturer's Association (CIMA). Each tamping-foot on the static roller shall project from the drum a minimum of 6 inches. Each tamping-foot on the vibratory tamping-foot roller shall project from the drum a minimum of 4 inches. The surface area of the end of each foot on each roller shall be no less than 5 1/2 square inches.

Nondurable shale shall be placed in 8-inch maximum loose lifts to the full width of the cross section. Excavation procedures shall accommodate the selective placement of the material. Each lift shall be bladed as required prior to compaction to ensure uniform layer thickness. Large rock fragments or limestone slabs having thicknesses greater than 4 inches and/or any dimension greater than 18 inches shall be removed from the layer to be compacted, or broken down and then incorporated into the lift.

If the shale is dry, the Contractor shall apply water to accelerate the slaking action (breakdown) and to facilitate compaction. The water shall be distributed by an approved method which provides uniform application of the required quantity of water. The water shall be uniformly incorporated throughout the entire lift by a multiple gang disk with a minimum disk wheel diamter of 24 inches. The amount of water shall be that required to achieve a moisture content within 2% of optimum as determined by AASHTO T99. This moisture content requirement shall have equal weight with the density requirements specified herein when determining the acceptability of a lyater. Moisture content tests will be conducted at such a frequency as deemed necessary to assure that the entire layer conforms to the specified moisture content.

Unless otherwise approved in writing by the Engineer, each embankment lift shall receive a minimum of 3 passes with the static roller followed by blading and a minimum of 2 passes with the vibratory roller. The rollers shall not exceed 3 mph during these passes. Each embankment layer shall be compacted to a minimum of 95 percent of maximum dry density as determined by AASHTO T99. The number of passes will, at the direction of the Engineer, be adjusted upward if necessary to obtain 95 percent of maximum dry density.

No separate measurement or payment will be made for compaction, as specified herein. Payment for all labor, machinery, materials, and other costs associated with the compaction of shale embankments to the specified density, except water, is considered incidential to earthwork items in the contract.

Water used as directed for providing the specified moisture will be measured by weight or volume (tank capacity or meter) and converted to 1,000-gallon units.

(d) Rock. Delete and replace with following:

Rock fill shall be placed in not to exceed 3-foot (1m) maximum lifts except that within a length of 6 times the height of the fill at an abutment, thickness of rock layers shall not be greater than 18 inches (0.5m). Rock, with greatest dimension of 2 feet (0.6m), may be used for embankment but shall be surrounded by soil, granular material, or broken down shale to eliminate voids and to permit solid compaction. The top two feet (0.6m) of all embankments shall be constructed of material other than rock and according to the specifications for placing the material used.

(e) Random Material. Add the following sentence:

Where rock is included in random material it shall be surrounded by soil, granular material, or broken down shale to eliminate voids.

ITEM 204 - SPECIAL EXCAVATION

204.01 Description

204.02 Construction Requirements

204.03 Method of Measurement

204.04 Basis of Payment

204.01 Description. Special excavation shall consist of excavation which is not included in 203 "Roadway Excavation and Embankment" or 503 "Excavation for Structures", and which is not an integral part of other Contract items. It shall include excavation for outlet trenches, test holes, removing unsuitable material below the foundation in trenches or other excavations as shown on the plans or as directed by the Engineer.

204.02 Construction Requirements. Special excavation shall be made as shown on the Plans, or as ordered by the Engineer. Outlet trenches shall be neatly trimmed and graded to the cross section indicated or ordered. Where test holes or other special excavations are made between curb lines, the backfill shall be compacted in accordance with 203. If the street is not to be paved under the Contract, restoration of the pavement will be made by City forces without cost to the Contractor.

204.03 Method of Measurement. The pay quantities for this item shall be only the excavation which is indicated on the Plans, called for in the Special Provisions or ordered by the Engineer. The unit of measurement shall be the cubic yard. The cubic yards (m^3) to be paid for shall be the volume of material in its original position excavated in accordance with the requirements of this item and measured by the method of average and areas.

204.04 Basis of Payment. The cubic yards measured as provided above shall be paid for at the contract unit price bid and shall include excavation, trimming and grading, sheeting and bracing, pumping, draining, backfilling and disposal of surplus materials:

Item	Unit	Description
204	Cubic Yards (m^3)	Special Excavation

ITEM 205 - SPECIAL FILL MATERIAL

205.01 Description

205.02 Method of Measurement

205.03 Basis of Payment

205.01 Description. Special fill material shall be furnished by the Contractor upon express direction of the Engineer when this particular type of material is required in the Work, and is not available from excavation on the improvement. Special fill material shall be granular material as defined in 703.11 and shall be of such a nature that it will compact

solidly under wetting and rolling. Special fill material shall be placed in strict accordance with the applicable provisions of 603.08 and/or 310.03.

205.02 Method of Measurement. The pay quantities for this Item shall be the number of tons of special fill material furnished by the Contractor. Slips showing the number of tons of material furnished shall be turned in to the Engineer each day. These slips must be signed by the foreman on the job and by the Inspector, and the quantity of fill material furnished by the Contractor will be computed from them.

Where the special fill material is used to backfill a sewer trench, the pay quantities for this Item shall be the number of tons (kg) used above the initial backfill one foot (0.3m) above the pipe, to the subgrade and for the maximum trench width allowed for sewers in street area, as shown on Standard Drawing Acc. No. 49032. For conversion of volume to tons (kg) for payment under this Item, Bank Run Gravel shall be considered to weigh 3400 pounds per cubic yard (2000 kg/m^3).

205.03 Basis of Payment. The number of tons (kg) measured as provided above shall be paid for at the contract unit price bid per ton (kg). This price and payment shall cover furnishing and placing the special fill material by the Contractor. No payment will be made for fill material obtained from excavation on the site of the work:

Item	Unit	Description
205	Tons (kg)	Special Fill Material

ITEM 255 - FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT

255.09 Method of Measurement

255.10 Basis of Payment

255.09 Method of Measurement. Delete and replace with the following:

The quantity of full depth pavement removal and rigid replacement to be paid for shall be the number of square yards (m^2) of full depth pavement removed to the limits established by the Engineer. Accepted quantities will be paid for at the contract unit price per square yard (m^2), which price and payment shall be full compensation for all paint, pavement removal, subbase removal for undercut replacement, subbase and subgrade correction, rigid replacement, joint sealing, furnishing and placing dowels and tiebars, full depth pavement sawing, and restoration of shoulders.

255.10 Basis of Payment. Delete and replace with the following:

Payment will be made at the contract price bid under:

Item	Unit	Description
255	Square Yard (m^2)	Full depth rigid pavement removal and rigid replacement.